

ROCKY FLATS PLANT
EMD OPERATING
PROCEDURES MANUAL

Manual No : 5-21000-OPS-FO
Procedure No Table of Contents, Rev 1
Page 1 of 2
Effective Date 10/18/91
Organization Environmental Management

THIS IS ONE VOLUME OF A SIX VOLUME SET WHICH INCLUDES

VOLUME I: FIELD OPERATIONS (FO)
VOLUME II GROUNDWATER (GW)
VOLUME III GEOTECHNICAL (GT)
VOLUME IV: SURFACE WATER (SW)
VOLUME V: ECOLOGY (EE)
VOLUME VI. AIR (AP)

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FOR VOLUME I: FIELD OPERATIONS

<u>New Proc No.</u>	<u>Old Proc No.</u>	<u>Title</u>	<u>Rev No.</u>	<u>Effective Date</u>
FO 01	1 1	Air Monitoring and Dust Control	1	8/30/91
FO 02	1 2	Field Document Control	1	8/30/91
FO 03	1 3	General Equipment Decontamination	1	8/30/91
FO 04	1 4	Heavy Equipment Decontamination	1	8/30/91
FO 05	1 5	Handling of Purge and Development Water	1	8/30/91
FO 06	1 6	Handling of Personal Protective Equipment	1	8/30/91
DCN 91 01		Approved practices for disposal of surface water monitoring PPE	1	9/19/91
FO 07	1 7	Handling of Decontamination Water and Wash Water	1	8/30/91
FO 08	1 8	Handling of Drilling Fluids and Cuttings	1	8/30/91
DCN 91 01		Delete locking requirement from drum sealing	1	8/30/91
FO 09	1 9	Handling of Residual Samples	1	8/30/91

REVIEWED FOR CLASSIFICATION/UC:II

By

Date

A-SW-000160

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FO 10	1 10	Receiving, Labeling, and Handling Environmental Materials Containers	1	8/30/91
DCN 91 01		Delete use of indelible markers	1	9/26/91
FO 11	1 11	Field Communications	1	8/30/91
FO 12	1 12	Decontamination Facility Operations	1	8/30/91
FO 13	1 13	Containerization, Preserving, Handling and Shipping of Soil and Water Samples	1	8/30/91
FO 14	1 14	Field Data Management	1	8/30/91
FO 15	1 15	Photoionization Detectors (PIDs) and Flame Ionization Detectors (FIDs)	1	8/30/91
FO 16	1 16	Field Radiological Measurements	1	8/30/91
FO 17	1 17	Determining Out-Of-Specification Analytical Results for Environmental Samples		To Be Added
FO 18	1 18	Environmental Sample Radioactivity Content Screening	1	8/30/91
FO 19	1 19	Base Laboratory Work	1	8/30/91

ENVIRONMENTAL MANAGEMENT DOCUMENT CHANGE NOTICE (DCN)

Procedure Number 5-21000-OPS-FO 6

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Title Handling of Personal Protective Equipment	Date 10-10-91	DCN Number 5-21000-OPS- <u>FO6</u> <u>91-01</u>
Expires <u>Upon Incorporation</u> <u>1/15/92</u> Procedure Revision Required <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>(due 10/15/91)</i>		
Scope Limitation <u>none</u>		

Item Number	Page	Step or Paragraph	Changes (Use DCN CONTINUATION SHEET for Additional Space)
1	2 of 10	3 0 3rd pa last sentence	Change From will be obtained by the <u>subcontractor</u> for further characterzation To will be obtained for further characterzation
2	4 of 10	6 0 1st pa second sentence	Change From chemical results of previous soil and groundwater analysis To chemical results of previous soil, surface water, and groundwater analysis
3	5 of 10	6 0 2nd paragraph	Insert the following sentence between 1st and 2nd sentences Field monitoring for non-intrusive activities (eg surface water sampling) will include radiation monitoring prior to leaving potentially radiation contaminated areas
4	7 of 10	6 2 1st pa last sentence	Change From will place their PPE in containers lined with plastic bags To will place their PPE in plastic bags while going

Justification (Reason for Change – Provide Numbers To Reference Corresponding Items Above)

The above changes are required to bring the revised SOP back to currently approved practices for disposal of surface water monitoring PPE As revised, addresses only the drilling activity PPE With respect to (4), a lined container is much more than what required for two discarded sets of PPE

Concurrence	Organization	Req	Date	Concurrence	Organization	Req	Date
<i>Henry M. Gm</i>	QAPM	X	10/15/91	<i>SCM</i>	User	X	10/15/91
Approval of Responsible Manager <i>M. L. Bousseau</i>		Date 10-15-91		Is Posting Req'd? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If Yes, By What Date? Immediately (10-16-91)	
						Date Posted	

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5-21000-OPS-GT
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VOLUME V- ECOLOGY (EE)
VOLUME VI- AIR (AP)

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FOR VOLUME III- GEOTECHNICAL

<u>New Proc No.</u>	<u>Old Proc No.</u>	<u>Title</u>	<u>Rev No.</u>	<u>Effective, Date</u>
GT 01	3 1	Logging Alluvial and Bedrock Matenal	1	8/30/91
GT 02	3 2	Drilling and Sampling Using Hollow Stem Auger Techniques	1	8/30/91
GT 03	3 3	Isolating Bedrock From the Alluvium with Grouted Surface Casing	1	8/30/91
DCN 91 01		Change in criteria for cement grouting	1	10/02/91
GT 04	3 4	Rotary Drilling and Rock Corng	1	8/30/91
GT 05	3 5	Plugging and Abandonment of Boreholes	1	8/30/91
GT 06	3 6	Monitoring Wells and Piezometer Installation	1	8/30/91
DCN 91 01		Industry Standard is 1 foot into Bedrock	1	10/15/91
DCN 91 02		For the Sitewide Program, Claystone Smearng does not seem to be a problem	1	10/15/91
GT 07	3 7	Logging and Sampling of Test Pits and Trenches	1	8/30/91
GT 08	3 8	Surface Soil Sampling	1	8/30/91

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<u>New Proc No.</u>	<u>Old Proc No.</u>	<u>Title</u>	<u>Rev No.</u>	<u>Effective Date</u>
GT 09	3 9	Soil Gas Sampling and Field Analysis	1	8/30/91
GT 10	3 10	Borehole Clearing	1	8/30/91
GT 11	3 11	Plugging and Abandonment of Wells	1	8/30/91
GT 15	3 15	Geophysical Borehole Logging	1	8/30/91
DCN 91 01		No Hole will be left Unlogged at the end of the day	1	10/15/91 .
GT 17	3 17	Land Surveying	1	8/30/91
GT 18	3 18	Surface Geophysical Surveys	1	8/30/91
GT 19	3 19	Field Gas Chromatographs	1	8/30/91
GT 20	3 20	Procedures for Soil Interstitial Water Sampling and Sampler Installation	1	8/30/91

ENVIRONMENTAL MANAGEMENT DOCUMENT CHANGE NOTICE (DCN)

Procedure Number 5-21000-OPS-GT 6 Rev 1

RECEIVED 10-15-91 Page 1 of 1

Title Monitoring Wells and Piezometer Installation	Date 10-4-91	DCN Number 5-21000-OPS- GT 6 91-1
Expires <u>Upon Incorporation</u> 1/15/91 Procedure Revision Required <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Scope Limitation <u>none</u>		

Item Number	Page	Step or Paragraph	Changes (Use DCN CONTINUATION SHEET for Additional Space)
1	5 of 17	3	Substitute "approximately one foot" for "approximately 6 inches or less"

Justification (Reason for Change – Provide Numbers To Reference Corresponding Items Above)

Industry standard is 1 foot into bedrock

Concurrence	Organization	Req	Date	Concurrence	Organization	Req	Date
<i>[Signature]</i>	QAPM	X	10/15/91	<i>[Signature]</i>	User	X	10/14/91

Approval of Responsible Manager <i>[Signature]</i>	Date 10-14-91	Is Posting Req'd? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, By What Date? 10-16-91	Date Posted
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ENVIRONMENTAL MANAGEMENT DOCUMENT CHANGE NOTICE (DCN)

Procedure Number 5-21000-OPS-GT 6 Rev 1

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Title Monitoring Wells and Piezometer Installation	Date 10-4-91	DCN Number 5-21000-OPS- STL 91-02
Expires <u>Upon Incorporation 1/15/92</u> Procedure Revision Required <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>CM 10/15/91</i>		
Scope Limitation <u>Sitewide Characterization Program only</u>		

Item Number	Page	Step or Paragraph	Changes (Use DCN CONTINUATION SHEET for Additional Space)
2	6 of 17	1	<p>For the sitewide geologic characterization program only, substitute "auger 2 feet into bedrock to provide a pilot hole for a 2-foot deep sediment sump " for "an appropriately sized drive sampler will be driven 2 feet into the claystone bedrock to provide a pilot hole for a 2-foot deep sediment sump "</p>

Justification (Reason for Change – Provide Numbers To Reference Corresponding Items Above)

For the sitewide program, claystone smearing does not seem to be a problem

Concurrence	Organization	Req	Date	Concurrence	Organization	Req	Date
<i>[Signature]</i>	QAPM	X	<i>10/15/91</i>	<i>[Signature]</i>	User	X	<i>10/14/91</i>
Approval of Responsible Manager <i>[Signature]</i>		Date <i>10-14-91</i>		Is Posting Req'd? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If Yes, By What Date? <i>ASAP (10-16-91)</i>	
						Date Posted	

ENVIRONMENTAL MANAGEMENT DOCUMENT CHANGE NOTICE (DCN)

Procedure Number 5-21000-OPS-GT15 Rev 1

Page 1 of 1

Title Geophysical Borehole Logging	Date 10-3-91	DCN Number 5-21000-OPS-GT6 91-01
Expires <u>Upon Incorporation</u> 1/15/92 Procedure Revision Required <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>cm 10/15/91</i>		
Scope Limitation <u>NONE</u>		

Item Number	Page	Step or Paragraph	Changes (Use DCN CONTINUATION SHEET for Additional Space)
1	4 of 5	2	Substitute "Every effort will be made to complete logging in one day " for "No hole will be left unlogged at the end of the day "

Justification (Reason for Change – Provide Numbers To Reference Corresponding Items Above)

To minimize rig downtime, logging should begin at the earliest opportunity, even if in the afternoon Logging should not be delayed so as to be completed in one day

Concurrence	Organization	Req	Date	Concurrence	Organization	Req	Date
<i>Larry M. Gm</i>	QAPM	X	<i>10/15/91</i>	<i>Q. L. Union</i>	User	X	<i>10/14/91</i>
<i>W. L. ANGLIMAN</i>	ERD	yes	<i>10/10/91</i>				

Approval of Responsible Manager <i>W. L. ANGLIMAN</i>	Date <i>10/10/91</i>	Is Posting Req'd? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, By What Date? <i>ASAP (10-16-91)</i>	Date Posted
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FOR VOLUME V ECOLOGY**

<u>New Proc No</u>	<u>Old Proc. No.</u>	<u>Title</u>	<u>Rev No</u>	<u>Effective Date</u>
EE 01	5 1	Sampling of Periphyton	1	5/91
EE 02	5 2	Sampling of Benthic Macroinvertebrates	1	5/91
EE 03	5 3	Sampling of Plankton	1	5/91
EE 04	5 4	Sampling of Fishes	1	5/91
EE 05	5 5	Sampling of Large Mammals	1	5/91
EE 06	5 6	Sampling of Small Mammals	1	5/91
EE 07	5 7	Sampling of Birds	1	5/91
EE 08	5 8	Sampling of Reptiles and Amphibians	1	5/91
EE 09	5 9	Sampling of Terrestrial Arthropods	1	5/91
EE 10	5 10	Sampling of Vegetation	1	5/91
DCN 91 01		To clarify methods for conducting vegetation surveys	1	8/19/91
EE 11	5 11	Identification of Habitat Types	1	5/91

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<u>New Proc No.</u>	<u>Old Proc No</u>	<u>Title</u>	<u>Rev No</u>	<u>Effective Date</u>
EE 12	5 12	Sampling of Soil for Soil Description	1	5/91
EE 13	5 13	Development of Ecology Field Sampling Plans	1	5/91
DCN 91 01		The outline for a field sampling plan is modified	1	8/20/91
EE 14	5 14	Assignment of Species Codes	1	5/91
EE 15	5 15	Assignment of Wildlife Habitat Codes	1	5/91
APPA		Appendix A Species Codes	1	5/91
APPB		Appendix B Wildlife Habitat Code	1	5/91

ENVIRONMENTAL RESTORATION & WASTE MANAGEMENT PROCEDURE CHANGE NOTICE (PCN)

PRESS FIRMLY AND PRINT LEGIBLY OR TYPE PROPOSED CHANGES TO INSURE DUPLICATE IS MADE ON ALL COPIES.

Procedure Number Ecology Volume V, # 5 10 ^{REV} (EE.10) ~~10~~

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Title Sampling of Vegetation		Date 8/19/91	PCN Number 5, 21200. OPS. EE.10- 91-01
URGENT Expires _____			
TEMPORARY Expires 11/4/91			
Item Number	Page	Step or Paragraph	Changes (Use PCN CONTINUATION SHEET for additional space)
1	6	Bullet 4	Walk along the transect and record each plant (by species) intercepted ("hit") by the tape measure at each 0.5m intervals (i.e. 100 hits per 50m transect). The meter mark on the edge of the tape (always right or always left) is the "point." A point frame or ocular sighting device may be used to define the point at each 0.5m interval. (All units will be measured to +/- 10%)
2	7	Bullet 6	If the FSP specifies conducting a "preliminary" vegetation survey then the configuration of sampling points may be varied as necessary to allow the collection of data more rapidly. Configuration of sampling must be kept consistent among transects where data are to be pooled. Data collected during preliminary surveys under different sampling configurations must be restricted in its use for comparisons between transects and limited to the purpose set out in the FSP. The configuration/method used shall be recorded in the comment section of the field form.

Justification (Reason for change - Provide numbers to reference corresponding items above.)
 Changes made to the SOP will clarify methods for conducting vegetation surveys based on purpose of the data. Flexibility will be added for options in the configuration of sampling points along the transect. Options will be allowed depending on the purpose of the data. The need for the change was to allow more rapid data collection during "preliminary" surveys where data are not intended to be used in site comparisons. Preliminary surveys needed to be completed in a particular block of time, therefore, an expedient method was more applicable.

Concurrence	Organization	Req.	Date	Concurrence	Organization	Req.	Date
Larry McEnroy	QAPM	X	8/19/91		User		
by M. Brogden							
					Other _____		

13. Approval of Responsible manager <i>Ralph J. Jolley</i>	14. Date 8/19/91	15. Is Posting required? Yes No	16. If Yes, by what date	17. Date posted
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ENVIRONMENTAL RESTORATION & WASTE MANAGEMENT PROCEDURE CHANGE NOTICE (PCN)

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Procedure Number Ecology Volume V, # 5 13, REV 1.0F (EE 13)

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Title Development of Ecology Field Sampling Plans	Date 8-19-91	PCN Number 5.21200 OPS EE 13-91-01
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URGENT Expires _____

TEMPORARY Expires. 11-15-91

Item Number	Page	Step or Paragraph	Changes (Use PCN CONTINUATION SHEET for additional space)
1	20	Sec 6 5	The outline for a field sampling plan shall be modified as per Attachment 1. (See attachment)

Justification (Reason for change - Provide numbers to reference corresponding items above)

As written, the Field Sampling Plan outline does not show enough detail. To clarify and make it more specific, details have been added to the outline. Also, slight adjustments were made which relocate specific sections of the outline. No sections were deleted, only rearranged. Some words were changed to parallel the EPA Guidance Document - EPA/540/G-89/004

Concurrence	Organization	Req.	Date	Concurrence	Organization	Req.	Date
Larry McEnroy	QA/M	X	8/12/91		User		
by M. Brogden							
<i>[Signature]</i>							
					Other		

13. Approval of Responsible manager <i>Meredith Brogden for Ralph Lindberg</i>	14. Date 8/19/91	15. Is Posting required? Yes No	16. If Yes, by what date	17. Date posted
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Field Sampling Plan Outline

I Site Background

A Study site detail

- 1 Operable Unit description
 - a location at RFP, areal extent including potential zone of influence
 - b IHSS's within the OU
 - c overview of the ecology at the OU
 - 1 vegetation / habitats
 - 2 wildlife
 - 3 aquatics / habitats
- 2 Synopsis of OU specific contamination information
 - a Brief summary of RI activities completed at the site to-date
 - b List of contaminants detected at the OU
 - c References to other documents containing RI results
- 3 Preliminary toxicity assessment
 - a Summary of the concentrations of contaminants detected
 - b Standards, ARARs, or limits set for the ecology risk assessment
 - c Summary of contaminant levels exceeding applicable limits
 - d Brief assessment of potential exposure pathways for biota

II Program Objectives

A Purpose and scope of Environmental Evaluations

- 1 Purpose and scope of the OU EE
- 2 General objectives of the OU EE
- 3 Summary of EE DQOs

B Purpose and scope of the Field Sampling Plan

- 1 FSP application of COCs
- 2 FSP application of selected Target Taxa

C General Field Sampling Approach

- 1 ecological studies
- 2 analytical studies

III Habitat and Taxon-Specific Sampling

A Study Locations

- 1 Sampling Sites
 - a rationale for OU sampling site selection
 - b identification of OU sampling sites
- 2 Reference Sites
 - a rationale for reference site selection
 - b identification of reference sites
 - c Differences between study sites and reference sites
- 3 Overlap of study objectives among different OUs

B Terrestrial sampling

- 1 Plants
 - a Sampling objectives
 - b Sample locations
 - 1 study sites

- 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 sample times and dates
 - e QA/QC sampling
- 2 Insects
 - a Sampling objectives
 - b Sample locations
 - 1 study sites
 - 2. reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2. sample times and dates
 - e QA/QC sampling
- 3 Birds
 - a Sampling objectives
 - b Sample locations
 - 1 study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 sample times and dates
 - e QA/QC sampling
- 4 Mammals
 - a Sampling objectives
 - b Sample locations
 - 1 study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 sample times and dates
 - e QA/QC sampling
- C Aquatic sampling
 - 1 Plants
 - a Sampling objectives
 - b Sample locations
 - 1 study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs

- d Sampling frequency
 - 1 list sample size
 - 2 sample times and dates
 - e QA/QC sampling
- 2 Invertebrates
 - a Sampling objectives
 - b Sample locations
 - 1 study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 Sample times and dates
 - e QA/QC sampling
- 3 Amphibians
 - a Sampling objectives
 - b Sample locations
 - 1 study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 sample times and dates
 - e QA/QC sampling
- 4 Fishes
 - a Sampling objectives
 - b Sample locations
 - 1 study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 Sample times and dates
 - e QA/QC sampling

IV Contaminants of Concern and Target Taxa

A Contaminants of Concern (COC)

- 1 Criteria for selection of COCs
- 2 Preliminary selection of COCs
 - a Justification for application of selection criteria

B Ecological receptors of concern

- 1 Criteria for selection of ecological receptors of concern
- 2 Preliminary taxa and tissues selected as ecological receptors of concern
 - a Justification for application of selection criteria

V Sample Handling and Analysis

A Terrestrial

1 Sample designation

- a taxa
- b tissues
- c number of samples and sample coding
- d samples from study sites vs samples from reference sites
- e laboratory QA sample requirements

2 Chemical analyses

- a. selection of target analytes
- b laboratory requirements
 - 1 sample volumes
 - 2 sample preservation & handling

3 Terrestrial Sampling Matrix

B Aquatic

1 Sample designation

- a taxa
- b tissues
- c number of samples and sample coding
- d samples from study sites vs samples from reference sites
- e laboratory QA sample requirements

2 Chemical analyses

- a selection of target analytes
- b laboratory requirements
 - 1 sample volumes
 - 2 sample preservation & handling

3 Aquatic Sampling Matrix

VI Toxicity Testing

1 Sampling objectives

2 Sample locations

- a media to be collected

3 Sampling equipment and procedures (reference to SOPs)

4 Sampling frequency

5 QA/QC sampling

6 Sample Handling and Analyses

- a species and protocols used
- b laboratory QA